



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,624	05/31/2006	Ernst Esswein	3926.237	7366
30448	7590	11/29/2007		
AKERMAN SENTERFITT P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			EXAMINER ALI, HYDER	
			ART UNIT 3747	PAPER NUMBER
			MAIL DATE 11/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,624

Applicant(s)

ESSWEIN ET AL.

Examiner

HYDER ALI

Art Unit

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 16-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/10/06</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 16 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over POPOOLA ET AL (NOVEL POWERTRAIN APPLICATIONS OF THERMAL SPRAY COATINGS, "SURFACE ENGINEERING, 1998, PAGES 107-112, VOL. 14, NO.2, THE INSTITUTE OF MATERIALS, LONDON) in view of Weintz et al (EP 0,338,204 A2) or Liang et al (EP 1,172,452 A2) or Ohashi (JP 01138095 A) and Palma (US 5,915,743) or Hycner (US 6,240,639) or Watchko et al (6,763,576) or Fleri (4,724,819).

Popoola et al discloses valve seat coatings that are applied directly to aluminium cylinder heads. By comparison with conventionally injected valve seats, the method is simplified in this way and heat transfer improved. Laser surface welding 'laser cladding', electrowelding methods, friction welding and thermal spraying methods are cited as being suitable. Thermal spraying is mentioned as being advantageous since, with carefully selected alloy wires or powders, unique alloys can be produced. An electric arc spraying system with two wires, made of high-carbon steel and a nickel alloy respectively, is given as a typical example, a corrosion resistant valve seat made of an Fe – Fe304/Ni – NiO – CrO composite material being produced therewith. **Popoola et al discloses dependent upon the intended application in each case, a large number of other alloys are commonly used for valve seat rings, including cobalt alloys for high performance engines.**

Popoola et al discloses the claimed invention except for the use of a Co or a Co/Mo based alloy with Mo + Co > 50 wt.% and Fe < 5 wt. %. In addition, the layer-thickness is between 0.1 and 2 mm.

The Examiner introduces **Weintz et al or Liang et al or Ohashi and Palma or Hycner or Watchko et al or Fleri** as the secondary references to show:

Weintz et al discloses cobalt based alloys for coating machine components that are subject to high thermal stresses, valve seats in combustion engines being mentioned specifically. The alloys can be applied by autogenous methods as well as by plasma powder surface welding methods, conventional mechanically resistant alloys of the Stellite type are given in table 1, these having a Co or a Co + Mo content of greater than

50 mass %, an Fe content of less than 5 mass % and a Cr content of between 5 and 30 mass %. Alloys which are of a similar composition and, in addition, contain between 0.105 and 0.8 mass % of nitrogen.

Ohashi discloses flexible composite wires made of Stellite or Tribaloy for the deposition of hard surfaces. Table 1 shows the use of Stellite 1, Stellite 6 and Tribaloy T800, each containing < 5 wt.% of Fe and > 50 wt.% of Co. the proportion of cobalt is substantially within the matrix.

Liang et al discloses Co rich and Mo rich alloys that are suitable for valve seats in combustion engines.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide an cobalt based alloys as taught by **Weintz et al or Liang et al or Ohashi** in order to make valve seat ring of **Popoola et al** with cobalt and/or cobalt/molybdenum alloy for improving the life of valve seat ring subjected to high thermal stresses.

With regard to layer-thickness is between 0.1 and 2 mm. No inventive contribution is evident in the aforementioned features, the thickness of the respective layers appearing to be within the usual range for valve seat rings. Moreover, Popoola et al refers explicitly to the fact that, dependent upon the intended application in each case, a large number of other alloys are commonly used for valve seat rings, including cobalt alloys for high performance engines.

Palma or Hycner or Watchko et al or Fleri all discloses arc wire spray process.

Application/Control Number:
10/566,624
Art Unit: 3747

Page 5

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide arc wire spray process as taught by Palma or Hycner or Watchko et al or Fleri in order employ arc wire spraying for Popoola et al valve seat ring since these are art recognized equivalent spraying methods.

With regard to the dependent claims the subject matter of dependent claims are known from Popoola et al, Weintz et al, Liang et al, Ohashi and/or being a routine technical practice within the scope of a person having ordinary skill in the art of internal combustion engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (571) 272-4836. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Kirk Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ha